REMARKS

I. Status of Claims

Applicants appreciate the Office's indication that claims 96, 113, and 162-165, previously withdrawn, can be included in the claims under examination.

Claims 1-79, 84-86, 88-89, and 141 were cancelled previously.

Without prejudice or disclaimer, claims 81, 87, 90, 91, 93, 94, 96-103, 106-109, 112-129, 131-133, 139, 158, and 159 have been cancelled herein, and claims 80, 92, 95, 130, 134, 140, 166, and 176 have been amended. Support for those amendments can be found either in the original claims or in the specification as filed, for example, the eight variants at pages 34-37.

Claims 80, 82, 83, 92, 95, 104, 105, 110, 111, 130, 134-138, 140, 142-157, and 160-165 are pending and subject to examination upon entry of this paper.

II. Claim Rejections - 35 USC § 112

Claims 158 and 159 are rejected under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the written description requirement. Advisory Action at 2. Specifically, the Office maintains the position that the identity of "the active material" is unclear. Applicants respectfully disagree.

However, solely to expedite prosecution of this application, Applicants have cancelled claims 158 and 159, thereby rendering this rejection moot. This rejection thus should be withdrawn.

III. Claim Rejections - 35 USC § 103

A. Over Mougin in view of Frechet and Melchiors

Claims 80-82, 86, 87, 90, 93, 103, 104, 144, 145, and 160- 165 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Mougin (U.S. Application Publication No. 2002/0115780) in view of Frechet (U.S. Patent No. 6,663,855) and Melchiors (U.S. Patent No. 6,531,535) for reasons as set forth at page 2 of the Office Action. Applicants respectfully disagree and traverse.

Claim 80 is drawn to a liquid cosmetic composition comprising at least one non-elastomeric linear block ethylenic polymer in a cosmetically acceptable organic liquid medium. That claim further includes numerous functional and structural limitations that the Office apparently has disregarded.

Looking first at the non-elastomeric linear block ethylenic polymer, the claim recites that it comprises a first block, a second block, and an intermediate block that connects the first block and the second block. And while that intermediate block is said to be "a random copolymer block," its function is far from random. Rather, as noted in the specification and in the claims, as amended, that intermediate block serves to join two polymers that are otherwise mutually incompatible. *See* lines 12-26, page 15, of the specification as filed. That is, a blend formed from a polymer corresponding to the first block and from a polymer corresponding to the second block is not miscible in the organic liquid that is the majority amount by weight of the organic liquid medium of the composition, at room temperature (25ºC) and atmospheric pressure whereas the resulting linear block ethylenic polymer is miscible in that organic liquid as demonstrated in the attached documents. *See*, attached Annex I and II.

Specifically, a composition comprising poly(isobomyl acrylate/iso- bornyl methacrylate) (50/50, 35% by weight) and poly(isobutyl acrylate) (15% by weight) in

isododecane (50% by weight) was prepared. As shown in Annex I, that composition was not homogenous and indeed, had multiple phases. In contrast, if those two polymer are instead coupled via an intermediate block such as recited in the pending claims, a uniform and homogenous composition results. Specifically, Annex II shows a composition comprising a linear block copolymer having a first block poly(isobornyl acrylate/isobornyl methacrylate), a second block poly(isobutyl acrylate) and an intermediate block poly(isobornyl acrylate/isobornyl methacrylate/isobutyl acrylate) (52% by weight) in isododecane. None of the cited references teaches or suggests that a random intermediate block can link two otherwise incompatible blocks to render the resulting composition miscible.

In addition, the linear block ethylenic polymer has a polydispersity ("PDI") of greater than 2.5. As the Office is aware, the polydispersity index (PDI) is a structural attribute of a polymer and indeed, is a measure of variability, as is discussed below. Notably, two polymers made of the same monomers can have different PDIs. The more heterogeneous the weights, the greater the PDI. Thus, a higher PDI reflects greater variability between individual polymer molecules.

PDI as a measure of variability is illustrated in a simple example below. In that example, an arbitrary monomer, represented as a dash, is used which has a molecular weight of *x* per residue. Coefficients are rounded to the hundredths position where applicable.

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[1] The word "polymer" is used in a collective sense; when individual polymer molecules are discussed herein, they are explicitly referred to as such.

Representative individual polymer molecules	-------- -------- -------- --------	--- ----- ---------- ----------	-- --- ---- ----------
Degree of heterogeneity	none	some	more
Mn	8 *x*	8 *x*	8 *x*
Mw	8 *x*	10.31 *x*	17.44 *x*
PDI	1	1.29	2.18

The first column shows a polymer whose individual polymer molecules have identical lengths and weights. This polymer has a PDI of unity. The second column shows a polymer with the same number-average mass Mn as the first column, but wherein there is some heterogeneity in the length and therefore the weight of individual polymer molecules. As discussed above, Mw is greater than Mn for this polymer, and the PDI is consequently greater than unity. In the third column, the number-average mass Mn of the polymer remains the same as in the other columns, but the length and weight heterogeneity is greater still, resulting in higher Mw and PDI values. Thus, even if polymers are made of the same monomer, they can have different PDIs. If they have different PDIs, the polymers are not structurally identical and they do not necessarily have the same properties.

Applicants thus maintain that polydispersity is not simply a distinction without a difference. Rather, the high polydispersity of the linear block ethylenic polymer, as recited in the pending claims, has a direct effect on the properties of the resulting cosmetic composition. In an effort to expedite prosecution, a Declaration under 37 C.F.R. § 1.132 in which a polymer according to the disclosure and within the scope of claim 80 is compared to a polymer with a lower PDI is attached hereto (because the declarant is currently unavailable for signature, the attached Declaration is not signed.

A signed formal copy of the attached Declaration will be submitted subsequently). Despite similar monomer content, the polymer according to the disclosure exhibited less brittleness and viscosity than the comparative polymer. Applicants respectfully submit that those beneficial properties would not have been predictable to one of ordinary skill in the art because none of the cited references discloses such properties that are attributable to the PDI

The Declaration shows that the polymer according to the disclosure differs from the comparison polymer. The lack of brittleness relative to the comparative polymer can render the polymer of the disclosure more suitable as a cosmetic composition, because the film formed by the polymer is less prone to cracking. Furthermore, that lack of brittleness is a result of the high PDI. That is, being composed of a linear block ethylenic polymer having a high PDI, the cosmetic composition comprises polymers that are more heterogeneic, i.e., some of the polymers are very long and others are substantially shorter, as illustrated in the table above. Applicants believe that it is those shorter polymers that contribute to the lack of brittleness in that they serve as plasticizers.

To be sure, Melchiors teaches that polydispersity values of 2.9-3.5 are acceptable. However, that teaching is in the context of hydroxyl-functional copolymers. The present claims, as amended, do not encompass such hydroxyl-functional copolymers. Melchiors does not teach or suggest any other polymers having high PDI as well as the other properties described herein.

Furthermore, claim 80 recites that the linear block ethylenic polymer is non-elastomeric. Frechet indicates that its polymers **are** elastomeric, stating, e.g.,

"Cosmetic or personal care compositions, such as for styling hair, comprise a thermoplastic **elastomer** which is a block copolymer . . ." *See* Abstract and col. 3, lines 26-29, of Frechet. Thus, the non-elastomeric polymers of claim 80 distinct from the polymers of Frechet because elastomericity is a fundamental and non-optional feature of the latter.

Similar to Frechet, Mougin also describes cosmetic use of block ethylenic copolymers of elastic nature. *See* Abstract. The non-elastomeric polymers of the instant claims are thus distinguishable from the polymers of Mougin.

Finally, as the Office is aware, polymers are complex molecules in that their structure and function varies with both monomer content and the polymerization process. The block polymers described in the subject application are prepared using free radical polymerization. In contrast, Mougin uses controlled free-radical polymerization technique to prepare the polymers. *See* paragraph [0016]. Controlled free-radical polymerization makes it possible to reduce the deactivation reactions of the growing free-radical species, in particular the termination step, these being reactions which, in standard free-radical polymerization, interrupt the growth of the polymer chain in an irreversible and uncontrolled manner. *See* paragraph [0017]As such, the polymers described in Mougin are prepared via different processes from those disclosed in the subject application. Thus, even if a Mougin polymer had the same monomer content as one of the block copolymers recited in the pending claims, those polymers would have different properties as a result of the use of the different processes.

In sum, none of the cited references describes the non-elastomeric linear block ethylenic polymers as recited in the pending claims. That is, those polymers comprise a random intermediate block that renders the resulting block polymer miscible in a liquid in which the mixture of the individual polymers corresponding to the two blocks are immiscible. Further, none of the cited references would have led a skilled artisan to use linear block ethylenic polymers having a PDI of greater than 2.5 as recited in the pending claims. None of the cited references describe the preparation of non-elastomeric linear block ethylenic polymers as claimed herein.

For the foregoing reasons, Applicants respectfully request that the rejection be withdrawn.

B. Over Anton in view of Kantner, Frechet, and Melchiors

Claims 80-83, 86, 87, 90-140, and 142-165 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Anton (U.S. Patent No. 6,153,206) in view of Kantner (U.S. Application Publication No. 2002/0076390), Frechet (U.S. Patent No. 6,663,855), and Melchiors (U.S. Patent No. 6,531,535) for reasons as set forth at pages 2-3 of the Advisory Action. Applicants respectfully disagree and traverse.

Similar to the references discussed above, neither Anton nor Kantner teaches or suggests that a random intermediate block can link two otherwise incompatible blocks to render the resulting composition miscible. Further, none of them teaches or suggests any relationship between PDI and desired property, let alone the property as described in the declaration submitted herein.

As indicated above, polymers are complex molecules in that their structure and function vary with both monomer content and the polymerization process. Here, both

Anton and Kantner prepare polymers using processes that differ from the process as used in this application (free-radical polymerization). Anton uses group transfer polymerization (GTP) technique to prepare the polymers. *See* lines 63-65, col. 5, and lines 65-67, col. 11. GTP is a living polymerization techniques known to prepare polymers with polydispersity index close to 1. Kantner uses emulsion or suspension polymerization. As such, the polymers described in Anton or Kantner are prepared via different processes from those disclosed in the subject application. Thus, even if an Anton or Kantner polymer had the same monomer content as one of the block copolymers recited in the pending claims, those polymers would have different properties as a result of the use of the different processes.

For the foregoing reasons, Applicants respectfully request that the rejection be withdrawn.

Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account No. 06-0916.

Respectfully submitted,

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